

***NATIONAL WEATHER SERVICE INSTRUCTION 30-2104
DECEMBER 23, 2004***

***Maintenance, Logistics, and Facilities
Systems/Equipment Maintenance, NWSPD 30-21
MAINTENANCE DATA DOCUMENTATION***

NOTICE: This publication is available at: <http://www.nws.noaa.gov/directives/>.

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SUMMARY OF REVISIONS: This directive supersedes National Weather Service (NWS) Instruction 30-2104, dated December 19, 2003 and has been revised to clarify and incorporate new and updated Maintenance Reporting Guidance.

Signed by Mark Paese for _____ December 9, 2004
John McNulty, Jr. _____ Date
Director, Office of Operational
Systems

Maintenance Data Documentation

<u>Table of Contents:</u>		<u>Page</u>
1	Introduction.....	3
1.1	EMRS Data	3
2	Scope.....	4
2.1	Legal Requirements	4
2.2	Point of Contact	4
2.3	Responsibilities.....	4
2.3.1	Assistant Administrator for Weather Services (AA)	4
2.3.2	Directors, Office/Region/National Centers for Environmental Prediction..	4
2.3.3	Director, Office of Operational Systems (OPS)	4
2.3.4	Director, Maintenance, Logistics, and Acquisition Division (OPS1)	4
2.3.5	Meteorologist-In-Charge (MIC), Hydrologist-In-Charge (HIC), Official-In-Charge (OIC)/Station Manager	5
2.3.6	NWS Employees Reporting Equipment Malfunctions	5
2.3.7	NWS Employees Performing Maintenance Activities	5
2.3.8	All Levels of Authority	5
3	General Instructions	5
3.1	Accessing the EMRS	5
3.2	Maintenance Record, WS Form A-26	5
3.3	Maintenance Data Reporting	6
3.3.1	Reportable Maintenance Events	6
3.3.2	When to Originate a WS Form A-26	6
3.3.3	When to Commit a WS Form A-26	7
3.4	Disposition of WS Form A-26s	7
3.5	Maintenance Data Quality Control	7
4	EMRS Handbook (EHB-4).....	7
5	References.....	7
<u>Appendices</u>		
A.	Acronyms.....	A-1

1 Introduction. This instruction describes the Engineering Management Reporting System (EMRS) and the procedures necessary for collecting data used to assess the reliability and maintainability (R&M) of weather surveillance systems. These systems are owned and/or maintained by the NWS. The data collected by EMRS is vital to achieving maximum responsiveness to the missions of the NWS.

The EMRS is the primary field level maintenance data collection, analysis and report generation tool used by the NWS. EMRS data allows the NWS to:

1. Determine equipment R&M.
2. Anticipate equipment maintenance requirements and provide R&M data at the national, regional and field site levels.
3. Measure the effectiveness of equipment upgrades and modifications.
4. Provide configuration data for specific equipment and systems.
5. Provide evidence of equipment operational status for use in legal matters.
6. Monitor engineering resources expended on designated equipment.
7. Provide program performance data.
8. Assess equipment maintenance requirements, and assist in planning for future electronics staffing levels.

1.1 EMRS Data. The equipment tracked by EMRS varies in nature. Equipment such as the NWS Weather Surveillance Radar is large, stationary, and composed of many subsystems and communication links. The NWS radar network interfaces with weather surveillance radars operated by the Department of Defense, and Department of Transportation to form a national radar network. Other equipment is small, portable, and unique to the NWS. Some equipment is located at remote locations, such as on mountain tops or on offshore oil platforms.

There are three general classes of data in EMRS.

1. Equipment inventory.
2. Equipment maintenance data.
3. Maintenance activity information.

Data collected, via EMRS, is used to produce standard and ad hoc maintenance data analyses and reports. These analyses and reports are provided to NWS Program Managers, Regional Officials, field sites and other agencies. EMRS reports include equipment status accounting, the analysis of equipment Operational Availability (A_o), R&M and engineering modification. Maintenance activity data is provided to NWS Program Managers and is used to assess equipment maintenance requirements, and assist in planning for future electronics staffing levels.

The information entered into EMRS is accessible four different ways.

- (1) EMRS Data Entry System.
- (2) EMRS Web page at http://ops13web.nws.noaa.gov/pls/emrsuser/emrs_main.home
- (3) End-User ad hoc query and analysis tools.
- (4) Standardized or ad hoc reports.

2 Scope. The maintenance reporting requirements of this document apply to equipment designated by the Director of the Office of Operational Systems. Equipment codes for maintenance reporting are listed in document EHB-4, appendix C. Maintenance reporting begins upon the activation of a system or site, and continues through deactivation. All maintenance events, including site preparation work, are reported using EMRS. In addition, all Field Staff activities associated with contract maintenance, including contract maintenance oversight, is documented in the EMRS.

2.1 Legal Requirements. Once the Weather Service Form A-26, EMRS Maintenance Record (WS Form A-26) is completed and has been entered into the system, it is a legal record and can only be modified by contacting Weather Service Headquarters (WSH). There are no legal requirements to retain paper copies of the WS Form A-26 after data has been committed into the EMRS Data Entry System.

2.2 Point of Contact. Contact the WSH Maintenance, Logistics, and Acquisition Division, Configuration Branch, (W/OPS13) at (301) 713-1892, for information or assistance regarding EMRS.

2.3 Responsibilities. Responsibilities are detailed in document NDS 30-2104, which can be found on the NWS Directive System's web page at: <http://www.nws.noaa.gov/directives/>.

2.3.1 Assistant Administrator for Weather Services (AA). The Assistant Administrator has overall responsibility for ensuring NWS-wide implementation of maintenance policy.

2.3.2 Directors, Office/Region/National Centers for Environmental Prediction. WSH Office Directors, Regional Directors, and the Director for the National Centers for Environmental Prediction are responsible for administering EMRS procedures within their organization. These responsibilities include:

1. Recommendation of equipment designated for tracking within EMRS.
2. Compliance with maintenance policy and EMRS procedures.
3. Assurance that personnel understand and carry out EMRS responsibilities.

2.3.3 Director, Office of Operational Systems (OPS). The Director has overall responsibility for implementing EMRS procedures and designating equipment for tracking with EMRS.

2.3.4 Director, Maintenance, Logistics, and Acquisition Division (OPS1). The Director provides fundamental engineering and acquisition services for the improvement of operational NWS systems. These responsibilities include:

1. Developing and maintaining EMRS.

2. Providing information essential to acquisition, operation, and support management. This includes defining inputs for reliability and maintainability estimates, standards and goals.
3. Developing maintenance policies and EMRS procedures that are planned, integrated, and developed in conjunction with logistics, acquisition, engineering, configuration management, and safety/environmental directives.
4. Ensuring NWS employees have access to EMRS.

2.3.5 Meteorologist-In-Charge (MIC), Hydrologist-In-Charge (HIC), Official-In-Charge (OIC)/Station Manager. The MIC, HIC, OIC and Station Manager are responsible for the day-to-day administration of EMRS procedures within their offices. They will ensure that:

1. Office staff complies with EMRS procedures.
2. Site-specific EMRS procedures and guidance are developed and implemented.
3. Employees responsible for EMRS reporting carry out their responsibilities.
4. Site personnel are aware of EMRS reporting requirements.

2.3.6 NWS Employees Reporting Equipment Malfunctions. Employees will comply with maintenance policy and EMRS procedures, initiating maintenance requests using the EMRS Data Entry System. If there is no access to the data entry system, employees will follow locally established procedures to ensure proper notification and routing of the maintenance request.

2.3.7 NWS Employees Performing Maintenance Activities. Employees performing maintenance and maintenance related system administration on NWS equipment are responsible for documenting their maintenance activities using the EMRS Data Entry System. They are also responsible for completing all WS Form A-26s originated by other employees to request maintenance.

2.3.8 All Levels of Authority. All levels of authority will measure how effectively they have satisfied EMRS reporting requirements. All operating units will review EMRS maintenance activity, Operational Availability (A_o) and R&M reports.

3 General Instructions. The EMRS Data Entry System is a maintenance data collection and analysis tool accessible via the internet. The system requires internet connectivity and the Internet Explorer web browser to transmit and receive data from a centralized database located at WSH, in Silver Spring, MD. The EMRS integrates web applications that aggregate all NWS field level maintenance reporting requirements, communications to the Electronics Staff, and maintenance data analysis into one web based application.

3.1 Accessing the EMRS. The EMRS is for official NWS use only. A valid username and password are required to access the system. Contact WSH Maintenance, Logistics, and Acquisition Division, Configuration Branch (W/OPS13), at (301) 713-1892, for information or assistance regarding access to EMRS.

3.2 Maintenance Record, WS Form A-26. The Maintenance Record, or WS Form A-26, is used to report maintenance activity on all equipment designated by the Director of the Office of Operational Systems. Reportable maintenance activities include equipment outages, routine maintenance, maintenance related system administration, activations, deactivations, and

engineering modification implementation. See Appendix C for a listing of designated equipment.

3.3 Maintenance Data Reporting. Originate a WS Form A-26 when a maintenance event occurs. A maintenance event is defined as any routine or non-routine maintenance activity associated with preventive maintenance, equipment failure, activation, deactivation, modification, or when special sampling is conducted. If more than one maintenance event is associated with a piece of equipment, a separate WS Form A-26 for each maintenance event is required. For example, if an Electronics Technician (ET) investigates a failure of a Radar Data Acquisition (RDA) equipment group, and a second ET investigates another non-related failure within the same RDA, each of these non-related maintenance events require a separate WS Form A-26.

Enter all information regarding the maintenance event. Incomplete data may lead to confusion about the maintenance performed or the outage that occurred. Use the EMRS Data Entry System to submit WS Form A-26s, to request maintenance, and to report maintenance activity. If there is no access to the data entry system, employees will follow locally established procedures to ensure proper notification of maintenance requests and documentation of maintenance activities.

3.3.1 Reportable Maintenance Events. There are five types of reportable maintenance events:

1. Corrective Maintenance - The remedial action to correct failures and restore system/equipment operation to prescribed capabilities and tolerances. This includes unplanned and non-periodic repairs, as well as systems administration performed as a result of evidence indicating a failure has occurred or is imminent.
2. Equipment Management - The accomplishment of equipment activations, deactivations, relocations, and other similar activities.
3. Modification - The authorized hardware and/or software configuration changes required to improve/extend systems or equipment operations/life or to satisfy new requirements.
4. Special Activity - The short-term or limited collection of data (special sampling) for specific purposes.
5. Preventive/Routine Maintenance - Maintenance actions performed on equipment to ensure continued operation within the prescribed capabilities or to minimize failure probability. Routine maintenance includes scheduled, planned or periodic preventive maintenance actions.

3.3.2 When to Originate a WS Form A-26. NWS Field Staff must submit an WS Form A-26 when:

1. An equipment failure occurs.
2. Equipment undergoes routine maintenance activities.
3. Equipment is relocated.
4. Special activity or sampling occurs.
5. Equipment is activated, deactivated or modified.

3.3.3 When to Commit a WS Form A-26. A WS Form A-26 is committed when all activities associated with the maintenance event are concluded. The EMRS Data Entry System will not permit a maintenance record to be committed unless all mandatory data fields are entered and the data meets validation requirements for consistency and logic. If data types and logic do not match, (e.g., the Close Date is later than the Current Date) a warning will be displayed on the computer screen. When data validation is complete and correct, the WS Form A-26 may be committed to the EMRS database.

NWS Field Staff should commit a WS Form A-26 when:

1. An outage is cleared and the equipment is returned to service.
2. Equipment is activated, deactivated, modified or relocated.
3. Regularly scheduled maintenance is completed.
4. Other maintenance activities are completed.

3.4 Disposition of WS Form A-26s. Once a WS Form A-26 has been saved to the EMRS database, there is no requirement to retain or forward hard-copies to WSH.

3.5 Maintenance Data Quality Control. Automated and manual processes provide quality control of EMRS data. Equipment performance measurements and maintenance data trends are computed and analyzed. Staff-hour information accumulates, and is monitored to assess Maintenance Staff requirements. Parts failure trends are monitored to highlight items with high failure rates. Configuration management data is loaded and reviewed. Maintenance goals, processes and directives are then modified to achieve maximum responsiveness to the missions of the NWS. All operating units review and monitor this data.

4 EMRS Handbook (EHB-4). This document, updated regularly, outlines in greater detail the EMRS procedures necessary for collecting data, used to assess the reliability and maintainability (R&M) of NWS weather surveillance systems. The handbook can be found at the following url: http://ops13web.nws.noaa.gov/pls/emrsuser/emrs_main.home.

5 References. The following references also contain greater detail.

NWSPD 30-11, Engineering Modifications

NWSPD 30-12, Configuration and Data Management

NWSI 30-1201, Data Management

NWSI 30-1202, Engineering Drawings

NWSI 30-1203, Configuration Management for Operational Systems

NWSI 30-1204, Site Identifiers

NWSPD 30-21, System Maintenance

NWSI 30-2101, System Maintenance Management

NWSI 30-2106, Radar Maintenance

NWSI 30-2107, NOAA Weather Radio Maintenance

NWSI 30-2108, Surface Equipment Maintenance

NWSI 30-2110, Hydrologic Maintenance

NWSI 30-2111, ASOS Maintenance

NWSPD 30-22, Technical Orders

NWSI 30-2201, Engineering Documentation

NWSPD 30-31, Logistics Planning and Operations

NWSI 30-3101, Supply Manual and Catalog

APPENDIX A. - ACRONYMSTable of Contents:Page

1	Acronym Descriptions	A-1
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1	Acronym Descriptions
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<u>Acronym</u>	<u>Description</u>
A _o	Operational Availability
AA	Assistant Administrator for Weather Services
A-26	WS Form A-26, EMRS Maintenance Record
ACN	AWIPS Communication Network
ACT	Activation(s)
AES	Area Electronics Supervisor
AOMC	ASOS Operations and Monitoring Center
ASN	Agency Stock Number
ASOS	Automated Surface Observing System
AT	Action Taken Code
AWIPS	Advanced Weather Interactive Processing System
BIT	Built-in-Test
CLS	Consolidated Logistics System
CM	Configuration Management
CMIS	Configuration Management Information System
COTS	Commercial Off-The-Shelf
CRS	Console Replacement System
DAPM	Data Acquisition Program Manager
DEACT	Deactivation(s)
ECP	Engineering Change Proposal

<u>Acronym</u>	<u>Description</u>
EHB	Engineering Handbook
EMRS	Engineering Management Reporting System
EPM	Electronics Program Manager
EQUIP	Equipment
ESA	Electronic Systems Analyst
ET	Electronics Technician
FMK	Field Modification Kit
GSA	General Services Administration
H-14	WS Form H-14, Equipment Return Tag
HIC	Hydrologist-In-Charge
HMT	Hydro-Meteorological Technician
HOW MAL.	How the System Malfunctioned
ID	Identification
LRU	Lowest Replaceable Unit
MDC	Maintenance Data Collection
MIC	Meteorologist-In-Charge
MOD	Modification(s)
NCF	(AWIPS) Network Control Facility
NEXRAD	Next Generation Radar
NLSC	National Logistics Supply Center
NOAA	National Oceanic and Atmospheric Administration
NOAA Form 37-4	Stores Requisition
NRC	National Reconditioning Center
NSN	National Stock Number
NWR	NOAA Weather Radio
NWS	National Weather Service

<u>Acronym</u>	<u>Description</u>
NWSI	National Weather Service Instruction Manual
NWSLI	NWS Location Identifier
OIC	Official-In-Charge
PC	Personal Computer
QCI	Quality Control Inspection
OPS	Office of Operational Systems
OPS1	Maintenance, Logistics and Acquisition Division
OPS13	Maintenance, Logistics and Acquisition Division, Configuration Branch
R&M	Reliability and Maintainability
RC	Request for Change
RMS	Regional Maintenance Specialist
ROC	Radar Operations Center
SIB	Systems Integration Branch
SID	Station Identifier
SN	Serial Number
TELCO	Telephone Company
TIP	Technical Information Package
TM	Type Maintenance Code
URL	Uniform Resource Locator
VPN	Vendor Part Number
WFO	Weather Forecast Office
WKL	Work Load
WS Form A-26	Weather Service Form A-26
WSH	National Weather Service Headquarters, Silver Spring, Maryland

Acronym

Description

WSR-88D

Weather Surveillance Radar - 1988 Doppler